

Appl. No. 09/773,073
Amdt. Dated 12/01/2004
Reply to Office Action of 06/01/2004

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Listing of Claims:

Claims 1 - 2 (canceled)

Claim 3 (currently amended): ~~A The method of claim 1 wherein the step of performing policy processing further includes~~ for managing bandwidth in a packet data network in response to subscriber defined policies, said network including a service manager of a network service provider, a plurality of access hubs, and an access network, said service manager including a policy server entity, a call processing entity, a bandwidth management processing entity and a data store, said method comprising the steps of:

storing in the data store bandwidth management policies as defined by a subscriber for the plurality of access hubs and the line numbers assigned to that subscriber;

communicating said policies to the policy server entity in the service manager of the network service provider;

in response to a request for modification of the maximum bandwidth parameter in the communicated policy for one access hub of the subscriber, determining in the call processing entity in the service manager a current bandwidth utilization at the one access hub and whether the current bandwidth utilization exceeds a maximum bandwidth defined by the subscriber and stored in the data store; and

if such determination indicates that the requested bandwidth utilization exceeds the maximum bandwidth defined by the subscriber and stored in the data store, retrieving the bandwidth management policies defined for the one access hub from the data store of the service manager;

determining a call treatment rule for existing sessions at the one access hub;

if the call treatment rule indicates graceful reduction of bandwidth for existing sessions, invoking normal call processing in the call processing entity; and

if the call treatment rule indicates forced reduction of bandwidth for existing sessions, performing the steps of:

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retrieving the session and the service provider bandwidth management policies from the data store of the service manager;

analyzing, in the bandwidth management processing entity in the service manager information contained in the access hub, session, and service provider bandwidth management policies to identify an existing session at the one access hub for bandwidth reduction;

in response to a successful identification of a session for bandwidth reduction, modifying the connectivity for the identified session;

in response to an indication of successful connectivity modification, determining in the call processing entity in the service manager a new bandwidth utilization for the one access hub and whether the new bandwidth utilization exceeds the maximum bandwidth defined by the subscriber and stored in the data store; and

if such determination indicates that the new bandwidth utilization exceeds the maximum bandwidth defined by the subscriber and stored in the data store, repeating policy processing in the bandwidth management processing entity to identify another session for bandwidth reduction.

Claim 4 (original): The method of claim 3 wherein the step of analyzing the information contained in the access hub, session, and service provider bandwidth management policies includes analyzing a bandwidth reduction eligibility parameter defined by the subscriber and stored in the session policy and the charge class parameters defined by the service provider and stored in the service provider policy.

Claim 5 (original): The method of claim 3 wherein the step of modifying the connectivity for the identified session further includes the steps of:

communicating a request for bandwidth management to each access hub and network gateway associated with the identified session; and

communicating from each access hub and network gateway to the service manager an indication of whether the bandwidth reduction was successful.

Claims 6 - 8 (cancelled)

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Claim 9 (currently amended): A The method of claim 6 wherein the step of performing policy processing further includes for managing bandwidth in a packet data network in response to subscriber defined policies, said network including a service manager of a network service provider, a plurality of access hubs, and an access network, said service manager including a policy server entity, a call processing entity, a bandwidth management processing entity and a data store, said method comprising the steps of:

storing in the data store bandwidth management policies as defined by a subscriber for the plurality of access hubs and the line numbers assigned to that subscriber;

identifying a call attempt at one access hub;

determining, in the service manager, whether policy-based bandwidth management is supported for the subscriber;

if policy-based bandwidth management is supported by the subscriber, retrieving bandwidth management policies associated with the subscriber and the service provider from the data store in the service manager;

determining, in the call processing entity, a bandwidth utilization required to support the new session at the one access hub and whether the required bandwidth utilization exceeds a maximum bandwidth defined by the subscriber and stored in the data store of the service manager; and

if such determination indicates that the required bandwidth exceeds the maximum bandwidth defined by the subscriber and stored in the data store, retrieving the bandwidth management policies defined for the one access hub from the data store of the service manager;

determining a call treatment rule for existing sessions at the one access hub;

if the call treatment rule indicates graceful reduction of bandwidth for existing sessions, invoking normal call processing in the call processing entity; and

if the call treatment rule indicates forced reduction of bandwidth for existing sessions, performing the steps of:

retrieving the session and the service provider bandwidth management policies from the data store of the service manager;

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analyzing, in the bandwidth management processing entity in the service manager information contained in the access hub, session, and service provider bandwidth management policies to identify an existing session at the one access hub for bandwidth reduction;

in response to a successful identification of a session for bandwidth reduction, modifying the connectivity for the identified session;

in response to an indication of successful connectivity modification, determining in the call processing entity in the service manager a new bandwidth utilization for the one access hub and whether the new bandwidth utilization exceeds the maximum bandwidth defined by the subscriber and stored in the data store; and

if such determination indicates that the new bandwidth utilization exceeds the maximum bandwidth defined by the subscriber and stored in the data store, repeating policy processing in the bandwidth management processing entity to identify another session for bandwidth reduction.

Claim 10 (original): The method of claim 9 wherein the step of analyzing the information contained in the access hub, session, and service provider bandwidth management policies includes analyzing a bandwidth reduction eligibility parameter defined by the subscriber and stored in the session policy and the charge class parameters defined by the service provider and stored in the service provider policy.

Claim 11 (original): The method of claim 9 wherein the step of modifying the connectivity for the identified session further includes the steps of:

communicating a request for bandwidth management to each access hub and network gateway associated with the identified session; and

communicating from each access hub and network gateway to the service manager an indication of whether the bandwidth reduction was successful.

Claims 12 - 20 (cancelled)